

Amendment and Response

Serial No.: 09/346,412

Confirmation No.: Unknown

Filed: July 1, 1999

For: PROCESS VARIABLE GAUGE INTERFACE AND METHODS REGARDING SAME

Page 2 of 20

Remarks

The Office Action mailed 8 November 2001 has been received and reviewed. Claims 1-48 are pending. Reconsideration and withdrawal of the rejections are respectfully requested.

Drawings

The Examiner objected to Figure 5B asserting that all boxes should be labeled with appropriate descriptive matter. Applicants respectfully traverse the objection and respectfully submit that the boxes shown in Figure 5B are labeled with reference numerals 176 and 180-186. As such, Applicants respectfully submit that all boxes shown in Figure 5B are labeled with appropriate descriptive matter.

The Examiner objected to Figures 3 and 11 as containing the text "Honeywell Confidential and Proprietary". Applicants include separate papers showing proposed changes in red ink to Figures 3 and 11. Applicants respectfully request consideration and approval of the amendments by the Examiner.

Claims

No claims were amended in this response.

Double Patenting Rejection

Claims 1-48 were provisionally rejected under the judicially created doctrine of double patenting over claims 1-45 of copending U.S. Pat. Application No. 09/346,412. Applicants respectfully traverse the rejection. Applicants will consider filing a terminal disclaimer after the rejection is no longer provisional.

The 35 U.S.C. §103 Rejection

The Office Action rejected claims 1-48 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 4,675,147 to Schaefer *et al.* (hereinafter "Schaefer") in view of U.S. Patent No.

5,631,825 to van Weele *et al.* (hereinafter "van Weele"). Applicants respectfully traverse the rejections.

In claims 1 and 24, Applicants teach a graphical user interface for providing real-time process information to a user with regard to a process that is operable under control of one or more process variables. The graphical user interface includes a scale extending along a gauge axis, one or more bars that extend along the gauge axis, and a graphical shape displayed along the gauge axis. Each of the one or more bars is displayed along the gauge axis, and each bar is representative of a set of high and low process limit values for a process variable. The graphical shape is representative of a current value of the process variable that is provided to the graphical user interface.

Schaefer indicates that "[t]he real time actual and reference values of parameters pertinent to key safety concerns of a . . . power plant are used to generate an integrated graphic display representative of the plant safety status" (Abstract). "Some of the status signals are analog and some are binary . . . limit signals are also generated [for the analog signals] and are normalized by locating indicia representative of all the high limits a second fixed distance from the common origin" (Col. 3, lines 50-55). "The actual values of the operating parameters are then indicated by locating the vertices of the polygon relative to the fixed distance on the appropriate scale determined by the current values of the reference signal and the limit signals (Col. 3, lines 56-61). So, the real time actual values of the operating parameters are plotted on the graphical display for monitoring the safety status of the plant.

Van Weele recites an operator station for a manufacturing process control system. The process control system of van Weele includes a network of at least one dedicated process control computer (PCC) for monitoring and controlling "SECTIONS" of the manufacturing process wherein each "SECTION" includes one or more "SEQUENCES" of the manufacturing process (van Weele, Abstract). Van Weele provides an "operator station 20 interface, [with] display means in the form of a primary display 26 and a secondary display 28" (Col. 17, lines 64-66). Van Weele recites that "there are selected specific application windows that are present upon

startup of the operator station” and that these windows are “always present and cannot be removed, reduced in size, or iconized” (Col. 11, lines 25-29). “The following standard application windows are preferably located on the primary display: the SECTIONS Overview Window; the SEQUENCES Overview window; the Plant Overview Flowsheet Window; and the Flowsheet-Dependent Trend Window” (Col. 11, lines 30-35). The PCCs “each typically control a plurality of SEQUENCES which together define a portion or all of a manufacturing process and its control environment” (Col 7, lines 34-38). “A SECTION is a logical collection of SEQUENCES” (Col. 7, line 42).

Van Weele states that “SECTION Indicators and SEQUENCE Indicators both preferably contain an object called a Critical Success Factor (CSF) . . . [where] [t]he goal of the CSF object is to provide the operator with an overall view of the status of a SECTION or SEQUENCE while consolidating the information of the operator in an abstracted indicator” (Col. 15, lines 49-54). “The CSF calculation should be defined by the process control engineer in such a manner that it preferably produces a value within a predefined range . . . [which in] a preferred embodiment, a range of 0 to 1.0 is utilized, with zero indicating that the plant is operating under ideal circumstances and one indicating a plant upset condition” (Col. 15, line 66 – Col. 16, line 4).

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references must teach or suggest all the claim limitations.

Applicants respectfully submit that the Examiner has failed to specifically point out where the element of “one or more bars extending along the gauge axis, each bar representative of a set of high and low process limit values for a process variable” recited in claims 1 and 24 is taught or suggested in Schaefer and/or van Weele. The Examiner states that “[t]he difference between the claim and Schaefer et al. is one or more bars extending along the gauge axis, each

bar representative of a set of high and low process limit values for the process variable” (Office Action, page 3). The Examiner, however, fails to specifically point out where the element of the one or more bars, as recited in claims 1 and 24, is taught or suggested in either Schaefer or van Weele.

In addition, Applicants respectfully submit that Schaefer and van Weele fail to teach or suggest all the claim limitations of claims 1 and 24. For example, Schaefer and van Weele fail to teach or suggest one or more bars extending along a gauge axis, where each bar represents a set of high and low process limit values for a process variable, as recited in claims 1 and 24. Schaefer recites that “[t]he values of parameters represented in analog form are dynamically scaled between the reference value and high and low limits which are displayed as tic marks at fixed distances along spokes radiating from the common origin and passing through the vertices” (Schaefer, Abstract). Thus, Schaefer recites “spokes” on which high and low limits are scaled and displayed, but not bars that represent a set of high and low process limit values for a process variable, as recited in claims 1 and 24.

Van Weele recites that “[t]he CSF calculation should be defined by the process control engineer in such a manner that it preferably produces a value within a predefined range . . . [which in] a preferred embodiment, a range of 0 to 1.0 is utilized, with zero indicating that the plant is operating under ideal circumstances and one indicating a plant upset condition” (Col. 15, line 66 – Col. 16, line 4). Figure 33 of van Weele is recited to illustrate “a sample Change dialog box . . . the components typically employed in connection with a value change” (Col. 30, lines 33-35). “The value of the element can be changed directly in the value box 328” (Col. 31, lines 8-9). Van Weele, however, fails to teach or suggest that bars represent a set of high and low process limit values for a process variable.

In addition, Applicants were unable to clearly understand the Examiner statement that one skilled in the art would have modified “the gauge axis and the graphical shape as taught by Schaefer et al. to include representative of a set of high and low process limit values for a process variable of van Weele et al. in order to provide an operator station which presents

Amendment and Response

Serial No.: 09/346,412

Confirmation No.: Unknown

Filed: July 1, 1999

For: PROCESS VARIABLE GAUGE INTERFACE AND METHODS REGARDING SAME

Page 6 of 20

process, thereby enabling human supervision of the plurality of manufacturing processes from a single physical location” (Office Action, page 4). Applicants generally traverse the Examiner’s assertions, and respectfully request that the Examiner clarify such assertions so Applicants have a chance to more fully respond thereto.

Applicants further submit that the Examiner has failed to clearly identify some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. The Examiner asserts that it “would have been obvious to one of ordinary skill in the art . . . to modify the gauge axis and the graphical shape taught by Schaefer et al. to include representative of a set of high and low process limit values for a process variable of van Weele et al. in order to provide an operator station which presents process, thereby enabling human supervision of the plurality of manufacturing processes from a single physical location, as taught by van Weele et al.” Applicants respectfully submit that they are unable to fully understand what the Examiner asserts is the motivation to combine the recited documents in the statement “in order to provide an operator station which presents process, thereby enabling human supervision of the plurality of manufacturing processes from a single physical location, as taught by van Weele et al.” Applicants generally traverse the Examiner’s assertions, and respectfully request that the Examiner clarify such assertions so Applicants have a chance to more fully respond thereto.

With respect to claims 2-23 and 25-48, Applicants respectfully submit that these claims are also patentable as further limitations of patentable base claims 1 and 24. Furthermore, claims 2-8, 11, 12, 14, 19-23, 25-33, 35-37, 39, 44 and 45-48 besides others, are each patentable over Schaefer and van Weele based on the subject matter recited in each of the claims.

For claims 2 and 25, the Examiner asserts that Schaefer recites the subject matter of claims 2 and 25, and points to figure 1, column 11, lines 38-64 of Schaefer. Applicants respectfully traverse the rejections.

Figure 1 of Schaefer “is a graphical display” (col. 5, lines 17-20) that is recited to be a “polar coordinate display emanating from a common origin” (Col. 8, lines 34-35). With respect

Amendment and Response

Serial No.: 09/346,412

Confirmation No.: Unknown

Filed: July 1, 1999

For: PROCESS VARIABLE GAUGE INTERFACE AND METHODS REGARDING SAME

Page 7 of 20

to figure 1 of Schaefer, “[t]he spokes 1 through 8 radiating from the common origin 0 each represents the scale for one or more process parameters . . . [where] points 9 through 16, which are all fixed distance from the common origin 0, represent the target or reference value for the associated parameter or parameters” (Col. 8, lines 36-41). “Upper limits for each parameter are plotted at points 18 through 25 at a second fixed distance from the common origin 0 outside the reference values and lower limits . . .” (Col. 8, lines 49-54). Column 11, lines 38-64 of Schaefer recites a “second spoke of the terminate mode display of FIG. 5 illustrates ‘Power Mismatch’ in percent . . . [t]he third spoke of the terminate mode display is dedicated to two binary signals representing containment sump level and temperature alarm conditions, respectively” (Col. 11, lines 38-57). Thus, Schaefer recites polar coordinate display having axes in the form of spokes. Figure 1 and the cited portion of Schaefer both fail, however, to teach or suggest a bar, and clearly fail to teach or suggest a first bar that extends along a gauge axis, where the first bar has a first end representative of an engineering hard high limit for the process variable, and a second end representative of an engineering hard low limit for the process variable, as recited in claim 2 and 25.

For claims 3 and 26, the Examiner asserts that Schaefer recites the subject matter of claims 3 and 26, again pointing to figure 1 and column 11, lines 38-64 of Schaefer. Applicants respectfully traverse the rejections.

Applicants respectfully repeat the statements made about Schaefer above for claims 2 and 25, and submit that figure 1 and the cited portion of Schaefer both fail to teach or suggest a first bar that extends along a gauge axis. In addition, the Examiner asserts that the “difference between Schaefer et al. and the claim is a first end of the first bar is representative of an operator set high limit for the process variable and a second end of the first bar is representative of an operator set low limit for the process variable . . . [but that] van Weele et al. shows the operator set high and low limit values on figure 33, 338, column 31, lines 1-13” (Office Action, page 4). The Examiner, however, has failed to identify some suggestion or motivation, either in the

Amendment and Response

Serial No.: 09/346,412

Confirmation No.: Unknown

Filed: July 1, 1999

For: PROCESS VARIABLE GAUGE INTERFACE AND METHODS REGARDING SAME

Page 8 of 20

references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine references, as asserted in the office action.

For claims 4 and 27, the Examiner asserts "Schaefer et al. demonstrates the one or more bars extending along the gauge axis further include a delta soft high region within first bar and adjacent the first end thereof and a delta soft low region within the first bar and adjacent the second end thereof (column 13, lines 47-64 and column 14, lines 19-36), and further wherein the delta soft high region and the delta soft low region are representative of a delta optimization range within the operator set high and low limits (column 9, lines 8-38)" (Office Action, page 4). Applicants traverse the rejections. However, the Examiner in rejecting claims 1 and 24 stated that "[t]he difference between the claim and Schaefer et al. is one or more bars extending along the gauge axis . . ." (Office Action, page 3). As such, the Examiner has alleged that Schaefer both teaches and does not teach one or more bars extending along the gauge axis. Applicants respectfully submit that the Examiner's position that Schaefer does not teach such bars is clearly correct.

In addition, Applicants teach that the bar of the present invention "may include a delta soft high region and a delta soft low region representative of a delta optimization range within a bar representative of the operator set high and low limits" (page 7, lines 23-26). In contrast, the cited portion of Schaefer recite, in part, "[t]he second spoke of FIG. 6 . . . displays the startup rate which is determined as a function of the core flux measured by the nuclear instrumentation system . . . [and] [s]poke 3 of FIG. 6 displays pressure in containment, 50, and presents the current numerical value in psig . . . [where] [t]he lower limit of this pressure and the reference value are a constant zero psig . . . [and] [t]he high limit is a constant 60 psig" (Col. 13, lines 47-63). Schaefer also recites "[s]poke 7 in the mitigate mode displays pressurizer level and is identical to spoke 7 in the terminate mode . . . [t]he last spoke of FIG. 6 displays the reactor coolant system wide range . . . pressure which . . . is the measured pressure in the pressurizer 41 . . . [where] [t]he limits for the wide range pressure scale are chosen based upon two safety concerns" (Col. 14, lines 19-28). Finally, Schaefer recites "[t]he manner in which positive

Amendment and Response

Serial No.: 09/346,412

Confirmation No.: Unknown

Filed: July 1, 1999

For: PROCESS VARIABLE GAUGE INTERFACE AND METHODS REGARDING SAME

Page 9 of 20

deviations from the reference value are determined is illustrated in FIG. 2 . . [where] [t]he result is a normalized fraction having a value which ranges from zero to one . . . [and] the location of the normalized actual value of the parameter is expressed in terms of the percentage of deviation of the actual value from normal toward the pertinent limit” (Col. 9, lines 8-34). Schaefer, however, fails to teach or suggest the delta soft high or low region, as defined by the Applicants and recited in claims 4 and 27.

For claims 5 and 28, Applicants respectfully traverse the rejections. Applicants respectfully repeat the arguments presented above for claims 2 and 25 in support of Applicants’ submission that Schaefer fails to teach or suggest a first bar that extends along a gauge axis, where the first bar has a first end representative of an engineering hard high limit for the process variable, and a second end representative of an engineering hard low limit for the process variable, as recited in claim 5 and 28.

In addition, Applicants note that in the rejection of claims 1 and 24 the Examiner stated that “[t]he difference between the claim and Schaefer et al. is one or more bars extending along the gauge axis . . .” (Office Action, page 3). In the rejection of claims 5 and 28, the Examiner now states that “Schaefer et al. also demonstrates the one or more bars extending along the gauge axis include: a first bar extending along the gauge axis (column 11, lines 38-64)” (Office Action, page 4). As such, the Examiner has alleged that Schaefer both teaches and does not teach one or more bars extending along the gauge axis. Applicants respectfully submit that the Examiner’s position that Schaefer does not teach such bars is clearly correct.

In addition, the Examiner failed to specifically point out where the element of the second bar, as recited in claims 5 and 28, is taught or suggested in either Schaefer or van Weele. Finally, the Examiner has also failed to identify some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, for one skilled in the art to modify the reference or to combine references, as asserted in the office action.

Amendment and Response

Serial No.: 09/346,412

Confirmation No.: Unknown

Filed: July 1, 1999

For: PROCESS VARIABLE GAUGE INTERFACE AND METHODS REGARDING SAME

Page 10 of 20

For claims 6 and 29, the Examiner asserts that "van Weele et al. teaches the second bar extending along the gauge axis representative of operator set high and low limits for the process variable on column 31, lines 1-15 and extends along the gauge axis within the first bar representative of the engineering hard high and low limits for the process variable . . . on figure 33, column 30, lines 33-67." Applicants respectfully traverse the rejections.

Column 31, lines 1-15 of van Weele recite, in part, that a "Change dialog box 302 is associated with a variable, [and] the upper and lower limits for that variable are generally displayed, at 322 and 324 . . . [and that] [a] value slider 326 is also typically included in a value Change dialog box to allow the operator to quickly change the value of the selected element." Van Weele, however, fails to teach or suggest that the value slider is a bar that is representative of both an operator set high and low limits for a process variable. The value slider of van Weele, in contrast, is recited to "allow the operators to quickly change the value of the selected element" (col. 31, lines 5-6). Thus, the value slider of van Weele can be used to change the value of a selected element, and not to represent both an operator set high and low limits for a process variable, as recited in claim 6 and 29.

The Examiner states that for claims 6 and 29 "van Weele et al. teaches [that] the second bar . . . extends along the gauge axis within the first bar representative of the engineering hard high and low limits for the process variable . . . on figure 33, column 30, lines 33-67." The Examiner also stated that for claims 1 and 24 that "[w]hile van Weele et al. shows the setting limits and changing values in figure 33, column 16, lines 1-10, they do not explicitly teach defining the high and low limit of the process variables" (Office Action, page 3). As such, the Examiner has alleged that van Weele both teaches and does not teach the high and low limit of the process variables. Applicants respectfully submit that the Examiner's position that van Weele does not teach such limits is clearly correct.

The Examiner's discussion of van Weele was then followed by the statement that "[h]owever, Schaefer teaches more detail about the setting limits and changing values on column 11, lines 11-37." Applicants respectfully submit the recited portion of Schaefer recites, in part,

Amendment and Response

Serial No.: 09/346,412

Confirmation No.: Unknown

Filed: July 1, 1999

For: PROCESS VARIABLE GAUGE INTERFACE AND METHODS REGARDING SAME

Page 11 of 20

“a typically high level display according to the invention with the PSSD system in the terminate mode . . . [where] plant parameters represented by each spoke and therefore each vertice of the polygon are indicated at the outer end of each spoke for identification by the operator” (col. 11, lines 11-19). The cited portion of Schaefer, however, fails to teach or suggest what the Examiner has asserted in the Office Action. In addition, Applicants are unclear as to what the Examiner is asserting Schaefer teaches or suggests in relation to pending claims 6 and 29. Applicants respectfully request clarification of the Examiner’s rejection of claims 6 and 29.

Finally, the Examiner has also failed to identify some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, for one skilled in the art to modify the reference or to combine references, as asserted in the rejection of claims 6 and 29.

For claims 7 and 30, the Examiner asserts that “Schaefer et al. also teaches the one or more bars extending along the gauge axis further include a delta soft high region within the second bar and adjacent the first end thereof and a delta soft low region within the second bar and adjacent the second end thereof (column 3, lines 42-68).” Applicants respectfully traverse the rejections.

As discussed above, the Examiner in rejecting claims 1 and 24 stated that “[t]he difference between the claim and Schaefer et al. is one or more bars extending along the gauge axis . . .” (Office Action, page 3). In rejecting claims 7 and 30, the Examiner now states that “Schaefer et al. also teaches the one or more bars extending along the gauge axis further include” As such, the Examiner has alleged that Schaefer both teaches and does not teach one or more bars extending along the gauge axis. Applicants respectfully submit that the Examiner’s position that Schaefer does not teach such bars is clearly correct.

In addition, the Examiner in rejecting claims 4 and 27 stated, “Schaefer et al. demonstrates . . . the delta soft high region and the delta soft low region are representative of a delta optimization range within the operator set high and low limits (column 9, lines 8-38).” In rejecting claims 7 and 30, the Examiner stated, “[t]he difference between the claim and Schaefer

et al. is the delta soft high region and the delta soft low region are representative of a delta optimization range within the operator set high and low limits.” As such, the Examiner has alleged that Schaefer both teaches and does not teach the delta soft high region and the delta soft low region are representative of a delta optimization range within the operator set high and low limits. Applicants respectfully submit that the Examiner’s position that Schaefer does not teach the delta soft high region and the delta soft low region are representative of a delta optimization range within the operator set high and low limits is clearly correct.

Finally, the Examiner has also failed to identify some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, for one skilled in the art to modify the reference or to combine references, as asserted in the rejection of claims 7 and 30.

For claims 8 and 31, the Examiner stated, “Schaefer et al. discloses the delta soft high region and the delta soft low region overlap within the second bar to provide for optimization to a pseudo set point (column 16, lines 25-51).” Applicants respectfully traverse the rejections.

As discussed above, the Examiner in rejecting claims 1 and 24 stated that “[t]he difference between the claim and Schaefer et al. is one or more bars extending along the gauge axis . . .” (Office Action, page 3). In rejecting claims 8 and 31, the Examiner now states that “Schaefer et al. discloses the delta soft high region and the delta soft low region overlap within the second bar . . .” As such, the Examiner has alleged that Schaefer both teaches and does not teach one or more bars extending along the gauge axis. Applicants respectfully submit that the Examiner’s position that Schaefer does not teach such bars is clearly correct.

With respect to the recited portion of Schaefer, column 16, lines 25-51, illustrate, in part, a VECT A “subroutine for determining the analog scaling . . . [that indicates where] vertice of the polygon is plotted . . .” Applicants teach that the bar of the present invention “may include a delta soft high region and a delta soft low region representative of a delta optimization range within a bar representative of the operator set high and low limits” (page 7, lines 23-26). Moreover, Applicants teach that the pseudo set point represents “the target optimization value

Amendment and Response

Serial No.: 09/346,412

Confirmation No.: Unknown

Filed: July 1, 1999

For: PROCESS VARIABLE GAUGE INTERFACE AND METHODS REGARDING SAME

Page 13 of 20

that will be used by the optimization algorithm when the delta soft bands overlap” and that the “controller 14 will attempt to control the process variable to the pseudo set point if at all possible” (page 29, lines 28-31). The cited portion of Schaefer, however, fails to teach or suggest either the delta soft high or delta soft low regions or the pseudo set point, as recited in claims 8 and 31.

For claims 9 and 10, Applicants respectfully traverse the Examiner’s assertions and respectfully repeat the arguments presented for claim 1 in support of the patentability of claims 9 and 10.

For claims 11, 12, 35, 36 and 37, the Examiner asserts Schaefer shows the elements recited in claims 11, 12, 35, 36 and 37 at column 3, lines 50-65. Applicants respectfully traverse the rejections.

Column 3, lines 50-56 of Schaefer recite, in part, that “[s]ome of the status signals are analog and some are binary . . . [and that] [f]or the analog signals, limit signals are also generated and are normalized by locating indicia representative of all the high limits a second fixed distance from the common origin and indicia representative of all the low limits a third fixed distance from the origin regardless of the real magnitudes of these limits.” “The actual values of the operating parameters are then indicated by locating the verticies of the polygon relative to the fixed distance on the appropriate scale determined by the current values of the reference signal and the limit signals” (Col. 3, lines 56-61). As such, the recited portion of Schaefer appears to recite generating, normalizing and locating the actual values of the operating parameters along the verticies of the polygon. Schaefer, however, fails to teach or suggest, for example, that one or more manipulation pointer flags are draggable along the gauge axis to change the set limits of either the operator set limits or the engineering hard limits, as recited in claims 11, 12, 35, 36 and 37.

For claims 14 and 39, the Examiner asserted that column 16, lines 25-50 of Schaefer teaches the elements recited in claims 14 and 39. Applicants respectfully traverse the rejection. Claims 14 and 39 teaches a graphical user interface that further includes at least one additional

graphical shape displayed along the gauge axis representative of at least one additional value for the process variable. The cited portion of Schaefer relates to a "VECT A" subroutine for determining the analog scaling", and the plotting and/or calculating of "the vector position or location of the vertice of the polygon." Schaefer's discussion of the VECT A subroutine, however, fails to teach or suggest, besides other things, that a graphical user interface includes an additional graphical shape displayed along the gauge axis that is representative of at least one additional value for the process variable, as recited in claims 14 and 39.

For claims 15-18 Applicants respectfully traverse the Examiner's assertions and respectfully repeat the arguments presented for claim 1 in support of the patentability of claims 15-18.

For claim 19, the Examiner stated, "Schaefer et al. discloses a background of a region adjacent the one or more bars along the gauge axis is of a color when the graphical shape representative of the current value of the process variable is outside the high and low process limit values, and further wherein the region is representative of engineering physical limits of the process variables (column 9, lines 39-66)." Applicants respectfully traverse this assertion.

As discussed above, the Examiner in rejecting claims 1 and 24 stated that "[t]he difference between the claim and Schaefer et al. is one or more bars extending along the gauge axis . . ." (Office Action, page 3). In rejecting claim 19, the Examiner now states that "Schaefer et al. discloses a background of a region adjacent the one or more bars along the gauge axis" As such, the Examiner has alleged that Schaefer both teaches and does not teach one or more bars extending along the gauge axis. Applicants respectfully submit that the Examiner's position that Schaefer does not teach such bars is clearly correct.

Schaefer recites that "when the actual value of a parameter equals or exceeds a limit value, the associated tick mark is displayed in red [but,] . . . the vertice of the polygon representing that parameter will be located at the tic mark . . ." (col. 9, lines 47-51). Thus, the vertice of the polygon representing the parameter is at the tic mark even when the parameter exceeds the limit value. Schaefer, however, fails to teach or suggest that the graphical shape

representative of the current value of the process variable is outside of the high and low process limit values, as recited in claim 19.

Applicants respectfully traverse the rejection of claims 20, 21 and 23. Applicants respectfully submit that the Examiner has failed to identify some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, for one skilled in the art to modify the reference or to combine references, as asserted in the rejection of claims 20, 21 and 23.

For claim 22, the Examiner asserts "van Weele et al. teaches the trend graph includes at least one of a historical trend graph and a prediction trend graph for displaying trend information representative of process variable limits (column 36, lines 35-52)." Applicants respectfully traverse the rejection.

Column 36, lines 35-52 of van Weele recite, in part, "the lines 196, 198, 200 correspond on a one-to-one basis with process primitives or variables associated with the currently displayed graphic sheet in the Plant Overview Flowsheet Window 40." Van Weele, however, fails to teach or suggest that trend information representative of process variable limits be displayed as either a historical trend graph or a prediction trend graph.

In addition, Applicants respectfully submit that the Examiner has failed to identify some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, for one skilled in the art to modify the reference or to combine references, as asserted in the rejection.

For claim 32, the Examiner asserts, "Schaefer et al. demonstrates the optimization pseudo set point is proportional to the delta soft high region and delta soft low region (column 16, lines 25-51)." Applicants respectfully traverse the rejection of claim 32.

As previously discussed, column 16, lines 25-51, of Schaefer illustrate, in part, a VECT A "subroutine for determining the analog scaling . . . [that indicates where] vertice of the polygon is plotted" Applicants teach that the bar of the present invention "may include a delta soft high region and a delta soft low region representative of a delta optimization range

Amendment and Response

Serial No.: 09/346,412

Confirmation No.: Unknown

Filed: July 1, 1999

For: PROCESS VARIABLE GAUGE INTERFACE AND METHODS REGARDING SAME

Page 16 of 20

within a bar representative of the operator set high and low limits" (page 7, lines 23-26).

Moreover, Applicants teach that the pseudo set point represents "the target optimization value that will be used by the optimization algorithm when the delta soft bands overlap" and that the "controller 14 will attempt to control the process variable to the pseudo set point if at all possible" (page 29, lines 28-31). The cited portion of Schaefer, however, fails to teach or suggest either the delta soft high or delta soft low regions, the pseudo set point or that the pseudo set point is proportional to the delta soft high and low regions, as recited in claim 32.

For claim 33, the Examiner asserts that column 3, lines 50-65, column 13, lines 46-67 and column 14, lines 1-35 of Schaefer recites the elements of claim 33. Applicants respectfully traverse the rejection.

The portions of Schaefer asserted to teach the elements of claim 33 recite, in part, that "[s]ome of the status signals are analog and some are binary . . . limit signals are also generated [for the analog signals] and are normalized by locating indicia representative of all the high limits a second fixed distance from the common origin" (Col. 3, lines 50-55). "The actual values of the operating parameters are then indicated by locating the verticies of the polygon relative to the fixed distance on the appropriate scale determined by the current values of the reference signal and the limit signals (Col. 3, lines 56-61). So, the real time actual values of the operating parameters are plotted on the graphical display for monitoring the safety status of the plant.

Schaefer also recites, in part, "[t]he second spoke of FIG. 6 . . . displays the startup rate which is determined as a function of the core flux measured by the nuclear instrumentation system . . . [and] [s]poke 3 of FIG. 6 displays pressure in containment, 50, and presents the current numerical value in psig . . . [where] [t]he lower limit of this pressure and the reference value are a constant zero psig . . . [and] [t]he high limit is a constant 60 psig" (Col. 13, lines 47-63). Schaefer also recites "[s]poke 7 in the mitigate mode displays pressurizer level and is identical to spoke 7 in the terminate mode . . . [t]he last spoke of FIG. 6 displays the reactor coolant system wide range . . . pressure which . . . is the measured pressure in the pressurizer 41 .

Amendment and Response

Serial No.: 09/346,412

Confirmation No.: Unknown

Filed: July 1, 1999

For: PROCESS VARIABLE GAUGE INTERFACE AND METHODS REGARDING SAME

Page 17 of 20

. [where] [t]he limits for the wide range pressure scale are chosen based upon two safety concerns" (Col. 14, lines 19-28). Schaefer, however, fails to teach or suggest that any high or low limit values can be changed. Thus, Schaefer fails to teach or suggest displaying user manipulation elements movable to change one or more high and low process limit values, or moving such user manipulation elements to generate data representative of changed high or low process limit values, as recited in claim 33.

For claims 41-43, Applicants respectfully traverse the Examiner's assertions and respectfully repeat the arguments presented for claim 24 in support of the patentability of claims 41-43.

For claim 44, the Examiner asserts that "Schaefer et al. also teaches determining whether the current value of the process variable is outside of the set of high and low process limit values and displaying a graphical element representative of engineering physical limits of the process variable when the current the graphical shape is positioned outside of the parallel lines when the value for the corresponding process variable is outside the high and low process limit values by a predetermined percentage (figure 1, 16, column 8, lines 36-59)." Applicants traverse the rejection.

Schaefer recites that "[t]he top level PSSD display . . . is a graphic representation of the status of the critical safety concerns . . . [where] [a]n example of such a display is illustrated in FIG. 1 . . . [where] [t]he points 9 through 16, which are all a fixed distance from common origin 0, represent the target or reference value of the associated parameter or parameters" (Col. 8, lines 30-41). In contrast, Applicants teach that the engineering physical limits recited in claim 44 are "limit values that define the physical limits of a piece of equipment or instrumentation . . . [and] represent the widest possible range of meaningful quantification of a process variable" (page 28, lines 7-11). So, Schaefer recites a single point that represent a "target or reference value", while Applicants teach the physical limit values of a piece of equipment or instrument. Thus, the recited portion of Schaefer fails to teach or suggest all the elements recited in claim 44.

For claim 45, the Examiner asserts that “van Weele et al. demonstrates displaying a graphical element representative of engineering physical limits of the process variable includes displaying background region adjacent the one or more bars along the gauge axis in a particular color representative of engineering physical limits (column 6, lines 30-65).” Applicants traverse the rejection.

Column 6, lines 30-65 of van Weele recites, in part, that the “operator station . . . may also include a graphical indicator of the current overall status of the selected SEQUENCE of the process represented as a Critical Success Factor (CSF) indicator which is a function of preselected parameters associated with the process . . . [where] the CSF indicator may be represented graphically as a circle divided into two contrasting shades forming a pie chart” “The operator station . . . also preferably includes other graphical indicators . . . which indicate the status of selected process parameters in a standard format . . . these graphical indicators are color coded to indicate relative levels of criticality” (Col. 6, lines 41-48). In contrast, Applicants teach displaying a background region adjacent one or more bars along a gauge axis in a particular color representative of engineering physical limits. While van Weele recites that graphical indicators are color coded, van Weele fails to teach or suggest that a background region adjacent the one or more bars along the gauge axis is displayed in a particular color that is representative of the engineering physical limits, as recited in claim 45.

Finally, the Examiner has also failed to identify some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, for one skilled in the art to modify the reference or to combine references, as asserted in the rejection of claim 45.

Applicants respectfully traverse the rejection of claims 46 and 47. Applicants respectfully submit that the Examiner has failed to identify some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, for one skilled in the art to modify the reference or to combine references, as asserted in the rejection of claims 46 and 47.

Amendment and Response

Page 19 of 20

Serial No.: 09/346,412

Confirmation No.: Unknown

Filed: July 1, 1999

For: PROCESS VARIABLE GAUGE INTERFACE AND METHODS REGARDING SAME

For claim 48, the Examiner asserted that van Weele recited the elements of these claims at column 14, lines 1-50 for claim 48. Applicants respectfully traverse the rejection.

Applicants respectfully submit that van Weele fails to teach or suggest, besides other things, a trend graph that includes displaying at least one of a historical trend graph and a prediction trend graph for the process variable representative of process variable limits. The cited portion of van Weele fails to teach or suggest that process variable limits are displayed on either a historical trend graph or a prediction trend graph, as recited in claim 48.

Finally, Applicants respectfully submit that the Examiner has failed to identify some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, for one skilled in the art to modify the reference or to combine references, as asserted in the rejection of claim 48.

Based on at least the forgoing reasons, the Office Action fails to establish a *prima facie* case of obviousness for the rejection of claims 1-48. Applicants respectfully request reconsideration and allowance of claims 1-48.

Amendment and Response

Page 20 of 20

Serial No.: 09/346,412

Confirmation No.: Unknown

Filed: July 1, 1999

For: PROCESS VARIABLE GAUGE INTERFACE AND METHODS REGARDING SAME

Summary

It is respectfully submitted that the pending claims 1-48 are in condition for allowance and notification to that effect is respectfully requested. The Examiner is invited to contact Applicants' Representatives, at the below-listed telephone number, if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted for

Jamieson et al.

By

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CERTIFICATE UNDER 37 CFR §1.8:

The undersigned hereby certifies that this paper is being deposited with the United States Postal Service as first class mail, in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on this 8th day of February, 2002.

By: 

Name: Mark J. Gebhardt

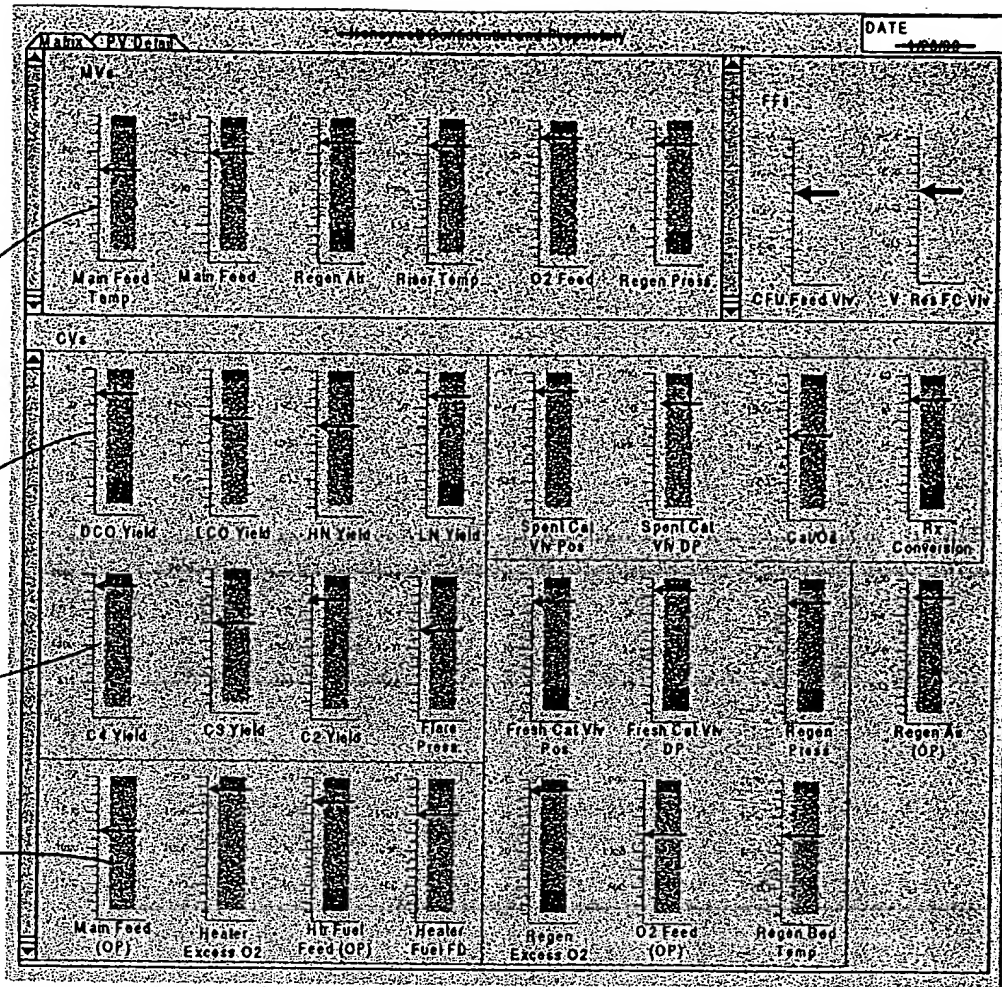


FIGURE 11